48. The regulatory flexibility afforded by the licensing approach that we adopt today will enable at least one licensee in each of the three band plans to deploy advanced broadband technologies and thereby provide a meaningful competitive alternative to services offered or being developed by a number of satellite-based competitors.[176] Spectrum blocks A, B, C, and F each provide sufficient bandwidth to deliver an array of broadband services to passengers onboard aircraft, including access to the Internet, corporate virtual private networks, personal email accounts, and VoIP services. These spectrum blocks also are well-suited for the provision of homeland security applications (*e.g.*, services to federal air marshals, the military, and first responders), communications with aircraft personnel, and monitoring of critical avionic systems.

49. Band plans 2 and 3 each include exclusive 1 MHz and 3 MHz spectrum blocks. While the holder of a 1 MHz spectrum block may not be able to provide the same level of broadband services as satellite providers such as Connexion by Boeing, or the holder of a 3 MHz spectrum block in the air-ground band, it could provide a meaningful competitive alternative to air-ground services currently offered by Globalstar and Iridium, which use satellite systems.[177] Space Data, for example, notes that a 1 MHz license could accommodate iDEN and most narrowband technologies, which would provide sufficient capacity for voice and short messaging services (SMS) that could compete with another operator in the band.[178] Once Verizon Airfone discontinues its narrowband operations in the 1 MHz spectrum block, our flexible regulatory approach would enable the holder of an exclusive 1 MHz spectrum block to offer more robust applications than currently provided by AirCell[179] and Verizon Airfone. A 1 MHz exclusive spectrum block also would be superior to Air-Ground Radiotelephone Automated Service (AGRAS) stations in the 454/459 MHz band, which serve the general aviation market, because AGRAS is analog and limited to 20 kHz emissions within 12 paired channels spaced at 25 kHz.[180] Given the variety of applications desired by the various aviation markets,[181] a 1 MHz spectrum block could be used to serve niche markets and customers with different service demands than larger passenger aircraft. Such applications might include email service, Internet access, messaging services, avionic support, and homeland security services. Accordingly, we find that a 1 MHz spectrum block would facilitate the competitive provision of a variety of air-ground voice and data applications.

50. *Competitive Safeguards.* AirCell expresses concern that an air-ground licensee could unfairly favor a particular class of subscribers or unreasonably refuse to provide service to certain airlines.[182] AirCell points out that Verizon Airfone currently offers lower service rates to subscribers of

[176] *See supra* paras. 14-20.

[177] *See supra* para. 21.

[178] Space Data November 29 Analysis at 2.

[179] *See supra* para 22. AirCell serves more than 1,400 customers and uses no more than six cellular channels (360 kHz authorized bandwidth) per ground station.

[180] AGRAS provides two-way telephone service with only 520 kHz of authorized bandwidth in the United Sates and Canada.

[181] We note there is a wide variety of airborne operations that could benefit from air-ground services, such as passenger airlines; commercial transport; business jets; general aviation including small business, propeller aircraft, pleasure flying, crop dusting, power line inspection, police and public safety, emergency medical transport, and traffic helicopters; and government aircraft. Many aircraft fly at 5,000 to 10,000 feet and would have service demands other than broadband internet.

[182] *See, e.g.*, AirCell Air-to-Ground Myths & Realities at 2 (suggesting major airlines might pressure an air-ground licensee not to serve some market segments).

wireless service provided by its affiliate, Verizon Wireless.[183] We note that, like other Part 22 licensees, 800 MHz Air-Ground Radiotelephone Service licensees are classified as commercial mobile radio service (CMRS) providers and thus are subject to common carrier regulation under Title II of the Communications Act.[184] While the Commission has previously decided to forbear from applying certain provisions of Title II to CMRS providers,[185] it has determined that it would be inappropriate to exempt CMRS providers from the competitive safeguards embodied in Sections 201 and 202 of the Act.[186] Air-ground licensees therefore are required to provide service upon reasonable request,[187] and their "charges, practices, classifications, and regulations for and in connection with" service must be just and reasonable.[188] Air-ground licensees moreover may not "make any unjust or unreasonable discrimination in charges, practices, classifications, regulations, facilities, or services for or in connection with a like communication service," and may not afford any undue or unreasonable preference or advantage to any person or class of persons.[189] Accordingly, if an air-ground licensee were to unreasonably discriminate in its service rates, terms, or conditions, it could be subject to enforcement action by the Commission as well as a complaint proceeding initiated pursuant to Section 208 of the Communications Act.[190]

51. Although the Commission retains the authority to enforce core provisions of Title II of the Act, the Commission previously determined to forbear from certain Title II provisions, including the tariffing provisions of Section 203, and to apply mandatory detariffing to CMRS providers (including 800 MHz air-ground licensees).[191] The Commission relieved CMRS operators of the requirement to file tariffs and prohibited them from filing voluntary tariffs.[192] The Commission based this determination on its finding that CMRS providers, including those in the 800 MHz air-ground band, were not dominant so as to warrant extensive regulation.[193] The Commission, however, remains free to revisit its determination regarding tariffing requirements should circumstances so warrant. In light of the unique characteristics of air-ground service, the Commission will monitor the development of the marketplace and will reserve the ability to take corrective action if necessary.

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[183] *See* AirCell London Declaration at 11 ¶20.

[184] *See* 47 U.S.C. § 332(c)(1); 47 C.F.R. §§ 20.9(a)(8), 20.15(a).

[185] *See* In The Matter of Implementation of Sections 3(n) and 332 of the Communications Act—Regulatory Treatment of Mobile Services, *Second Report and Order*, 9 FCC Rcd 1411 (1994) ("*CMRS Second Report and Order*").

[186] *See* Personal Communications Industry Association's Broadband Personal Communications Services Alliance's Petition for Forbearance for Broadband Personal Communications Services, *Memorandum Opinion and Order and Notice of Proposed Rulemaking*, 13 FCC Rcd 16857 (1998).

[187] *See* 47 U.S.C. § 201(a).

[188] *See* 47 U.S.C. § 201(b).

[189] Verizon Airfone states that, in the event it deploys broadband service in the air-ground band, any passenger could access a WiFi hot spot installed on an aircraft regardless of their service provider though roaming agreements with wireless companies, ISPs, and others that provide their customers with WiFi Access. *See* Letter from Donald C. Brittingham, Director-Wireless/Spectrum Policy, Verizon, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Oct. 21, 2004.

[190] Sections 201 and 202 are enforced through the formal complaint process established in section 208 of the Act, 47 U.S.C. § 208. Under section 208, any aggrieved party may file a petition with the Commission complaining of an alleged violation of these provisions.

[191] *CMRS Second Report and Order*, 9 FCC Rcd at 1418, 1480.

[192] *Id.* at 1480.

[193] *Id.* at 1469-1470.

(iv) Air-Ground Services

52. We seek to let marketplace forces, rather than prescriptive regulations, determine the highest valued air-ground service applications. Accordingly, a new licensee may provide any type of air-ground service (*i.e.*, voice telephony, broadband Internet, data, etc.) to aircraft of any type, and serve any or all aviation markets (*e.g.*, commercial, government, and general). A licensee must provide service to aircraft. We note that current bilateral agreements between the United States, Canada, and Mexico provide for coordinated use of air-ground frequencies over North American airspace and are based on a narrow bandwidth channel scheme, and therefore may need to be renegotiated to provide for more flexible use of this spectrum.[194]

53. In the *Notice*, we asked whether the air-ground spectrum should be limited to air-ground use, or whether we should allow for more flexible use.[195] At this time, we decide not to permit a licensee to provide ancillary land mobile or fixed services in the 800 MHz air-ground spectrum. We agree with T-Mobile that because there is only four megahertz of dedicated air-ground spectrum, it should be used predominantly for the provision of air-ground service.[196] We also note that a number of parties claim that adjacent band interference could arise from the provision of ancillary services.[197] While we believe that it would be possible to address the potential for adjacent band interference, we find that the public interest would be best served at this time by ensuring that this limited spectrum resource is devoted to the provision of air-ground service.

4. Technical Standards

54. We are adopting the minimal set of technical rules for the new air-ground service necessary to implement the three alternative band plan configurations that will be subject to auction. Generally, these rules provide licensees flexibility to deploy any type of transmission technology, provided that the radio emissions produced fit within a licensee's assigned spectrum. The new technical rules limit only transmitting power and the power level of unwanted emissions.

55. Under the new rules, an air-ground licensee will be allowed greater flexibility than under the current rules to deploy the technologies, both now and in the future,[198] that it believes will best enable it to provide services desired by consumers. As a general matter, these new technical rules are crafted to allow sufficient power to provide robust air-ground services, while limiting the potential for harmful interference to services operating in adjacent spectrum.

56. *Transmitting power limits.* In considering how the air-ground power limit rules may need to be modified, we first review the existing air-ground power limit rules. We note that inter-service interference has not been reported to the Commission as a significant problem under these rules. These

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[194] *See supra* note 29.

[195] *Notice*, 18 FCC Rcd at 8390 ¶21.

[196] *See* Letter from Thomas J. Sugrue, Vice President, Government Affairs, T-Mobile USA, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Nov. 15, 2004.

[197] *See* AirCell Air-to-Ground Myths & Realities at 1; Boeing December 8 *Ex parte*; Letter from Trey Hanbury, Senior Counsel, Nextel Communications, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 8, 2004 (letter regarding ancillary spectrum use); Letter from Luisa L. Lancetti, Vice President, Wireless Regulatory Affairs, Sprint, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 3, 2004. *See also* Cingular Wireless Comments at 6-9; AMTA Comments at 4.

[198] For example, licensees could utilize directional or smart antennas to increase capacity.

rules provide maximum transmitting power limits of 100 Watts ERP for ground stations, 30 Watts ERP for airborne mobiles, and 1 Watt ERP for low power ground stations.[199] These power limits were proposed by The Goeken Group Corporation in General Docket No. 88-96 as a part of a plan for sharing narrowband air-ground channels.[200] The principal technical elements of that plan, including the power limits, were ultimately adopted by the Commission.

57. In order to contribute to our goal of providing a viable, competitive terrestrial air-ground service, the new power limit rule must allow transmitting power sufficient to provide a robust broadband service. AirCell, Boeing, and Verizon each seek to provide high-speed Internet service using CDMA2000 1xEV-DO (as well as possibly Flash-OFDM in the case of Verizon Airfone) in the band, and we consider it likely that one of these technologies, or a similar technology, will be used in the reconfigured air-ground band. We therefore adopt a transmitting power level that will allow these broadband technologies to function efficiently. In the case of CDMA2000 1xEV-DO, the transmitting power has to be high enough to maintain a substantial positive signal to interference and noise ratio (SINR) in order to enjoy a high data rate. When the SINR drops below certain values, excessive errors result, and the system technology automatically compensates by changing the modulation type (*e.g.*, from 16QAM to QPSK) and lowering the data rate. In other words, with CDMA2000 1xEV-DO, transmitting power trades off against the data rate. With FLASH-OFDM, high data rates produce an emission envelope having a relatively high peak to average power ratio. These factors suggest that a ground station power limit higher than that in the existing rule is appropriate.

58. The studies and simulations filed in the record assume ground station power levels to be on the order of 400 to 600 Watts ERP.[201] AirCell asserts that airborne mobile stations may operate satisfactorily with less than 1 Watt ERP.[202] Verizon, on the other hand, claims that an airborne mobile power level of 12 Watts ERP is necessary to provide reliable high-speed Internet connectivity.[203] We have considered the various proposed air-ground forward and reverse power examples in the record,[204] and we conclude that a ground station maximum power limit of 500 Watts ERP and an airborne mobile station maximum power limit of 12 Watts ERP will allow a licensee to deploy CDMA2000 1xEV-DO and/or FLASH-OFDM with an ample margin. Installations will also be subject to the radiofrequency radiation exposure limits rules set forth in Section 1.1310 of the Commission's rules.[205]

59. *Potential for interference with adjacent services.* We next address the potential for interference to existing services operating in the spectrum adjacent to the air-ground service. A number of parties, including AirCell,[206] CTIA-The Wireless Association (CTIA),[207] Motorola,[208] Nextel

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[199] 47 C.F.R. § 22.867.

[200] Comments of The Goeken Group Corporation, Gen. Dkt. No. 88-96, Exhibit B, ¶9 (filed Aug. 8, 1989).

[201] *See, e.g.*, AirCell/Boeing Joint Proposal at 3-8.

[202] AirCell actually specifies 23 dBm EIRP, which is equal to 0.12 Watts ERP.

[203] *See* Coexistence Analysis for cross-duplex air-to ground system, filed Apr. 12, 2004, at 19. Verizon actually specifies 43 dBm EIRP, which is equal to 12.2 Watts ERP.

[204] *See, e.g.*, AirCell/Boeing Joint Proposal at 3-8.

[205] 47 C.F.R § 1.1310.

[206] AirCell Response to Nextel's Analysis on Wideband Air-to-Ground Inference, filed Nov. 23, 2004 ("AirCell November 23 *Ex parte*").

[207] Letter from Christopher Guttman-McCabe, CTIA, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 6, 2004 ("CTIA December 6 *Ex parte*")

Communications, Inc. (Nextel),[209] QUALCOMM,[210] and The Association of Public-Safety Communications Officials International, Inc. (APCO),[211] filed comments regarding the possibility of interference occurring between stations in the reconfigured air-ground band and those in the existing radio services immediately adjacent to the air-ground allotment.[212]

60. *Interference to air-ground from adjacent services.* Each of the two paired bands comprising the 800 MHz air-ground allocation is adjacent to and just above spectrum allocated to the cellular radiotelephone service. The 849-851 MHz uplink band is adjacent to and just below spectrum allocated to land mobile services, including public safety, which will soon become all public safety pursuant to the 800 MHz Order. The 894-896 MHz downlink band is adjacent to and just below spectrum allocated to land mobile services including 900 MHz SMR. These services are heavily used in many areas. Base stations in these adjacent services are authorized to utilize high power levels. Nextel argues that its experience with cellular out-of-band emissions (OOBE) and its 900 MHz SMR facilities show that such emissions could degrade the new air-ground operations.[213]

61. The services adjacent to the 849-851 MHz band are subject to rules that limit their potential to cause interference to air-ground service. We do not, at this time, find a need to adopt additional or more stringent rules applicable to the adjacent service licensees to further limit interference potential to the air-ground service.[214] It would be excessively burdensome and inefficient to apply more stringent OOBE limits to existing adjacent spectrum services, which would apply to their transmitters everywhere, in order to protect a far smaller number of air-ground ground stations that will be located in several hundred and generally widely separated locations. We believe that, under the current rules, new air-ground systems should be able, through careful ground station site selection and technical coordination with the licensees in the adjacent services, to build out their systems. Potential licensees

(Continued from previous page)

[208] Letter from Steve B. Sharkey, Director, Spectrum and Standards Strategy, Motorola, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Nov. 4, 2004 ("Motorola November 4 *Ex parte*")

[209] *See* Letter from Trey Hanbury, Senior Counsel, Nextel Communications, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 8, 2004 (proposing ten adjacent band interference mitigation measures) ("Nextel December 8 *Ex parte*"); Letter from Trey Hanbury, Senior Counsel, Nextel Communications, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 8, 2004 (letter regarding ancillary spectrum use); Letter from Trey Hanbury, Senior Counsel, Nextel Communications, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 6, 2004, transmitting "Harmful Interference from Wideband Air-to-Ground Systems into Public Safety, Specialized Mobile Radio, and Cellular Operations" ("Nextel December 6 *Ex parte*"); Wideband Air-to-Ground Interference Analysis of Nextel Communications, Nov. 16, 2004 ("Nextel November 16 *Ex parte*").

[210] *See* Letter from Dean R. Brenner, Senior Director, Government Affairs, QUALCOMM Incorporated, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 8, 2004 ("QUALCOMM December 8 *Ex parte*").

[211] *See* Letter from Robert M. Gurss, Director, Legal & Government Affairs, APCO, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Nov. 29, 2004 ("APCO November 29 *Ex parte*")

[212] These services are the Cellular Radiotelephone Service, the 900 MHz SMR service, and miscellaneous (interleaved) land mobile services, including Business, Industrial, Land Transportation and Public Safety.

[213] *See* Nextel November 16 *Ex parte* at 16. Nextel offers worst-case calculations indicating that OOBE from cellular base stations could increase the noise floor in air-ground ground station receivers. It does not appear that such an increase would cause the effects that constitute harmful interference.

[214] Existing rules, such as Section 22.917, 47 C.F.R. § 22.917, regarding cellular service, and Section 90.210, 47 C.F.R. § 90.210, regarding the land mobile services, already provide some interference protection to the 800 MHz air-ground band.

should plan on obtaining qualified engineering advice regarding system design and ground station site selection, taking fully into account the existing radio frequency environment at candidate sites.

62. *Interference to Cellular Block B.* The air-ground ground station transmit band at 849-851 MHz is adjacent to the Cellular Radiotelephone Service Block B band, which is used for cellular base station receivers. Noting this adjacency, QUALCOMM asserts that OOBE from ground stations could potentially cause interference to cellular base station receivers.[215] It suggests that we base our rule limiting ground station OOBE on a criterion it proposes as the maximum allowable amount of received power from such emissions into the cellular base station receivers.[216] QUALCOMM claims that in order to meet its criterion, a ground station transmitter would need to use a transmit filter with attenuation of as much as 60 dB at the band edge.[217] It argues that such filters would be impractical if a CDMA air-ground signal is transmitted with only 125 kHz of guard band between it and the cellular band edge.[218] QUALCOMM claims that, in order to use such filtering, a CDMA air-ground signal should be transmitted in the middle of the 2 MHz ground station transmit band, to provide 375 kHz of guard band. In making this assertion, QUALCOMM apparently ignores the fact that there is already a small de facto guard band at the top of cellular Block B. We disagree that guard bands greater than 125 kHz are necessary for interference avoidance purposes.[219]

63. We note that no harmful interference problems between the cellular service and the commercial air-ground service have been reported to the Commission during more than ten years of air-ground service operations, despite the fact that the air-ground mobile station and ground station transmit bands are reversed from the adjacent cellular bands.[220] We believe that several factors may explain why there have been no reported interference problems.[221] First, both services have OOBE limits to suppress undesired signals from adjacent allocations. Second, there are far fewer ground stations in an air-ground system than in a cellular system (*e.g.*, the entire U.S. airspace can be covered at an altitude of 20,000 feet by fewer than 200 ground stations). Third, an air-ground licensee must employ careful site selection practices for its ground stations, including an unobstructed view of the sky and consideration of the local RF environment (*i.e.*, what other stations are nearby). Further, air-ground antennas also are typically up-

[215] *See* QUALCOMM December 8 *Ex parte* at 1.

[216] Specifically, QUALCOMM asserts that the received power from ground station OOBE into cellular receivers should be limited to no more than −117 dBm within a 1.25 MHz bandwidth. *Id.* Because QUALCOMM apparently based this specification on preventing more than a *de minimis* increase to the purported noise floor of a cellular base receiver, we do not agree that it is appropriate as a generally applicable metric for determining harmful interference to cellular systems.

[217] *See* QUALCOMM December 8 *Ex parte* at 2.

[218] *See id.*

[219] QUALCOMM also argues that, in order to protect cellular base station receivers, the guard band within the air-ground band and adjacent to the cellular band should be even larger than it had previously advocated. *See id.* at 1-2.

[220] The 890-902 MHz band is also allocated to radiolocation operations on Government ships, but no new authorizations were to be granted for such operations after 1970. By reversing the base and mobile receive frequencies between the 849 MHz and 894 MHz bands, the potential for ship radiolocation operations to interfere with airborne receivers in the 894 MHz band was eliminated and ground station receivers would not likely be impacted by shipborne radiolocation operations. *See* 47 C.F.R. § 2.106 footnotes G2, US116 and US268.

[221] The current reversal of the base and mobile transmit bands means that the main potential path for interference is from cellular base station to air-ground base stations, and vice versa, and from airborne mobiles to cellular mobiles, and vice versa. The airborne mobiles, however, are generally too far away from terrestrial cellular mobiles when operating for mobile-to-mobile interference to occur.

tilted whereas cellular antennas are often down-tilted, adding some isolation between the two. The rule changes that we adopt to permit broadband air-ground services will not alter any of these factors and, consequently, we expect that these factors will be effective in avoiding inter-service interference under our new air-ground band plan.

64. Furthermore, we do not believe that the use of wider bandwidth technologies in the 800 MHz air-ground spectrum will result in increased interference between air-ground operations and cellular operations. Although spread spectrum emissions typically have broader out-of-band noise skirts, the level of this noise is subject to the Commission's OOBE rules. We also note that the broadband spread spectrum based technologies used in the cellular band and those that the parties have proposed for use in the air-ground band are resistant to small amounts of out-of-band noise.[222] In summary, we find that applying our standard OOBE rules here is adequate to limit unwanted emissions between ground stations in the air-ground service and base stations in the cellular service. We note that our standard OOBE rules also provide that the Commission may require greater attenuation of unwanted emissions in the event it is necessary to prevent interference to other services.[223]

65. The airborne mobile transmit band (894-896 MHz) is adjacent on its lower side to the cellular telephone receivers of the Cellular Block B licensee. There have been no reported instances of harmful interference between airborne mobile stations and cellular telephones. This stems from the large distance separation between aircraft and cellular phones on the ground, and our decision today does not change this factor. We conclude that our OOBE limits and the distance separation make it likely that the mobile units in these two services will continue to operate in adjacent spectrum without harmful interference problems. Nevertheless, if an air-ground licensee elects to operate aircraft mobile transmitters on the ground or during approach and take-off, they may find it necessary in some cases to provide additional attenuation of OOBE falling into the spectrum below 894 MHz, in order to avoid interference to cellular phones in use in the immediate vicinity of airports.[224]

66. *Interference to Public Safety*. The upper edge of the air-ground ground station transmit band at 849-851 MHz is adjacent to what are now mobile receivers for interleaved business, industrial and land transportation, SMR, and public safety radio channels, but which will soon become the National Public Safety Plan Advisory Committee (NPSPAC) public safety channels pursuant to the our recent 800 MHz Order.[225] Nextel asserts that OOBE from air-ground ground stations could produce a significant amount of noise energy in nearby public safety receivers.[226] Although we have found that emissions from cellular base stations may have contributed to interference problems with public safety and critical infrastructure mobile receivers above 851 MHz, there is no history of similar interference being caused by the existing air-ground ground stations to mobile receivers. There are again several factors that we believe may explain why air-ground caused interference is rare, including the fact that there are so few air-ground ground stations, as compared to cellular base stations, and the deployment characteristics of

[222] These technologies include GSM, TDMA, CDMA, and OFDM.

[223] *See* 47 C.F.R. § 22.917(d). *See also id.* §§ 24.238(d), 27.53(k).

[224] AirCell and Boeing propose to hand off air-ground service to terrestrial services (such as PCS) during take-off, landing, and while on the ground. *See* AirCell Further Notes on the Deployment of Two Cross-Polarized Systems at 4-7.

[225] *See 800 MHz Order*, 19 FCC Rcd at 15050 ¶151.

[226] Nextel November 16 *Ex parte* at 12. For example, Nextel calculates a 53 dB excess over the recently adopted public safety protection level for a public safety receiver located 50 meters (164 feet) away from a broadband air-ground ground station. Nextel's calculations are based on worst-case assumptions with regard to OOBE levels and propagation factors.

ground stations (*e.g.*, up-tilted antennas). Further, we note that NPSPAC operations above 851 MHz will be protected by our OOBE limit rule, including the provision that allows the Commission to require greater attenuation if necessary to prevent interference.

67. Nevertheless, in light of the substantial efforts of Nextel, APCO, public safety entities, and land mobile organizations to solve the interference problems in the 800 MHz band, we believe that it is prudent to adopt a rule providing that ground stations in the Air-Ground Radiotelephone Service that operate in the 849-851 MHz range will be subject to the same interference abatement obligation rules adopted for the cellular service in the 800 MHz Order.[227] We note that AirCell, APCO, Motorola, and Nextel concur that this would be an appropriate safeguard for public safety and critical infrastructure services.[228] AirCell argues, however, that we should not apply the interference abatement and resolution procedures established in the 800 MHz Order to the Air-Ground Radiotelephone Service.[229] We disagree. While we believe that the potential for adjacent band interference is minimal, we find that the public interest would be served by applying these safeguards to air-ground licensees. The rule we are adopting is essentially the same as that adopted for the cellular service in the 800 MHz Order. We will not require air-ground licensees to participate in the establishment of the electronic notification process because we anticipate that this process will be in place by the time that new air-ground licenses are issued.

68. In addition to applying the 800 MHz Order safeguards to the 800 MHz Air-Ground Radiotelephone Service, Nextel claims that we should adopt further adjacent band interference mitigation measures.[230] Nextel states that we should require air-ground licensees to avoid locating transmitters in public safety hotspots.[231] We find no basis for imposing this special requirement in addition to the 800 MHz Order safeguards that we apply. We also note there is no current mechanism for ascertaining the location of "public safety hotspots," and that such hotspots could change over time. We therefore decline to adopt Nextel's proposal. Nextel also asserts that we should direct air-ground licensees to submit detailed "documentation" of their system parameters and encourage them to mediate interference disputes with public safety and Critical Infrastructure Industry (CII) licensees.[232] We find that submission of such documentation to the Commission as well as mandatory mediation procedures are unnecessary in light of our application of the interference abatement and resolution procedures established in the 800 MHz Order to the air-ground service, and note as well that such documentation may be competitively sensitive. Nevertheless, we encourage air-ground, public safety, and CII licensees to work collaboratively to resolve interference using mediation and other appropriate forms of alternative dispute resolution procedures.

69. *Interference to 900 MHz SMR base receivers.* The airborne mobile transmit band (894-896 MHz) is adjacent on its upper side to the base station receive band in the 900 MHz SMR service. Distance separation will normally serve to protect 900 MHz SMR base station receivers because airborne stations normally operate at altitudes well above 900 MHz SMR base stations. Nextel, however, contends that there may be a problem where its 900 MHz SMR base stations are located near airport runways, and

[227] *See 800 MHz Order* at 15029-30 ¶¶105-107 (to be codified at 47 C.F.R. §§ 22.970(b), 90.672).

[228] *See* AirCell November 23 *Ex parte* at 10-11; APCO November 29 *Ex parte* at 1; Motorola November 4 *Ex parte* at 2-3; Nextel November 16 *Ex parte* at 12. Nextel, however, suggests that we adopt additional adjacent band interference mitigation measures. *See* Nextel December 6 *Ex parte* at 5 and Nextel December 8 *Ex parte*.

[229] *See* Letter from William J. Gordon, VP, Regulatory Affairs, AirCell, to Marlene H. Dortch, Secretary, Federal Communications Commission, dated Dec. 7, 2004.

[230] *See* Nextel December 8 *Ex parte;* Nextel December 6 *Ex parte* at 5.

[231] *See* Nextel December 8 *Ex parte* at 1.

[232] *See id.* at 1, 3.

if there are several aircraft at low altitude nearby at the same time.[233] This possibility appears to be atypical and we find that it would be best addressed on a case-by-case basis rather than by a broad-based rule. Air-ground licensees and 900 MHz SMR licensees should cooperate to resolve any interference problems of this type.

70. *Miscellaneous interference issues*. Nextel argues that the AirCell/Boeing shared spectrum approach would be less likely than the exclusive license approaches supported by Verizon and Space Data to create interference to services in adjacent spectrum bands.[234] Whether or not this may be true technically, we find that either approach can be deployed without causing harmful interference to adjacent services under the rules that we adopt today, provided that the licensees are aware of the potential for such interference and take necessary measures to comply with our rules to prevent such interference.

71. In view of the foregoing, we do not believe the record justifies adoption of more stringent OOBE limits for the Air-Ground Radiotelephone Service. Accordingly, we will apply our harmonized flexible OOBE limits rule, which currently applies to cellular and broadband PCS,[235] to the 800 MHz Air-Ground Radiotelephone Service. We note that, in the event that band plan 2 or 3 is implemented, the exclusive licensees would be subject to the OOBE standards between their spectrum blocks, as well as outside the air-ground band.

72. *Miscellaneous technical rules*. The existing air-ground rules have provided particular limits on transmitter frequency tolerance[236] and specifications for automated operating procedures.[237] We conclude it is unnecessary to retain such a detailed frequency tolerance rule. Under the legacy band configuration, numerous closely packed air-ground channels were shared by multiple licensees, so we required a frequency tolerance rule that tightly controlled frequency stability to minimize the possibility of adjacent channel interference. By contrast, our new rules establish wider spectrum blocks and we anticipate fewer communications channels. In addition, we expect that the advanced technologies likely to be used in this band will have to be inherently stable in order to work properly and possibly to compensate for Doppler shift as well. Thus, we find that we need only require in our rules that the frequency stability of equipment used be sufficient to ensure that, after accounting for Doppler frequency shifts, the occupied bandwidth of the fundamental emissions remains within the authorized frequency bands of operation. In the event that band plan 1 is implemented and licenses for spectrum sharing are issued, the licensees may choose to agree upon any number of miscellaneous technical standards that may be needed to facilitate shared spectrum operation and include them in the spectrum sharing plan that they would file with the Wireless Telecommunications Bureau.[238]

5. Incumbent Station KNKG804

73. Verizon Airfone is the sole incumbent currently operating in the 800 MHz air-ground

[233] *See* Nextel November 16 *Ex parte* at 15-16. Nextel offers worst-case calculations indicating that OOBE from nearby airborne mobile stations could increase the noise floor in 900 MHz SMR receivers. It does not appear that such an increase would cause the effects that constitute harmful interference.

[234] *See* Nextel December 6 *Ex parte* at 4.

[235] *See* 47 C.F.R. §§ 22.917, 24.238.

[236] 47 C.F.R. § 22.863.

[237] 47 C.F.R. § 22.865.

[238] *See supra* para. 34 & notes 137, 138.

band.[239] In April 2004, the company filed an application for renewal of its authorization to operate in the band, Call Sign KNKG804.[240] For the reasons stated below, we grant Verizon Airfone a non-renewable license for a five-year term commencing on the effective date of this Report and Order.

74. At the outset, we reject Verizon Airfone's assertion that it has earned the right to exclusive use of the 800 MHz air-ground band based on its past efforts to build and support an air-ground telecommunications system.[241] Under the existing 800 MHz air-ground band plan and rules, Verizon Airfone is subject to sharing the band with up to five additional competing licensees and is limited to providing voice and slow speed data services. Under the flexible rules that we adopt today, a new air-ground licensee may provide any type of air-ground service (*i.e.*, voice telephony, broadband Internet, data, etc.) to aircraft of any type, and serve any or all aviation markets.[242] Exclusive use of the air-ground band would confer fundamentally greater rights and access to substantially more spectrum than is available to Verizon Airfone under its existing license and the current 800 MHz air-ground rules. We note that the 929 Paging Order,[243] cited by the company, lends no support to its claim. In that proceeding, the Commission did not grant flexible spectrum rights or additional spectrum to existing licensees. Rather, the Commission granted exclusivity to existing and future paging licensees to use existing very-narrowband channels to provide paging services, provided that they satisfied certain construction and system loading requirements.[244] In view of the foregoing, we find that there is no justification for granting Verizon Airfone exclusive use of the 800 MHz air-ground band, which would provide it with a substantial windfall, and we conclude that permitting competing applications for licenses in this band would better serve the public interest.

a. Transition of Incumbent System

75. The parties, including Verizon Airfone, state that a new broadband air-ground system could not operate efficiently, if at all, in the same spectrum with Verizon Airfone's existing narrowband system.[245] The record reflects that paired 1.5 MHz channels will provide the necessary bandwidth to deploy broadband technologies such as CDMA2000 1xEV-DO.[246] In order to ensure that the air-ground spectrum can be used to provide broadband air-ground services to the public in the near future, it is imperative to clear the incumbent narrowband system from a minimum of three megahertz of spectrum as soon as reasonably practicable. We conclude that, given the declining and relatively low usage level of Verizon Airfone's system,[247] and because the original 800 MHz air-ground band plan was intended to

[239] Skyway, however, has an STA to continue operating the old ClairCom system subject to the outcome of this proceeding. *See supra* note 33.

[240] Airfone's application for renewal of its authorization is pending. *See* File No. 0001716212 (filed Apr. 28, 2004).

[241] *See* Verizon Airfone September 9 Statement at n.5.

[242] *See supra* para. 52.

[243] *See* Amendment of the Commission's Rules to Provide Channel Exclusivity to Qualified Private Paging Systems at 929-930 MHz, *Report and Order*, 8 FCC Rcd 8318 (1993), recon. granted in part, 11 FCC Rcd 3091 (1996) ("*929 Paging Order*").

[244] *Id.*

[245] *See, e.g.*, AirCell Response to FCC Questions at 7 (noting that "the incumbent system will create severe interference upon the broadband systems"); Verizon Comments at 10.

[246] *See supra* para. 31.

[247] We note that the demand for Verizon Airfone service has declined 80 percent in recent years, from an average of 15 users to only three users per flight. *See* Joe Sharkey, "Almost here: Cell phones at 37,000 feet," N.Y. Times, Oct. 10, 2004, at C6.

accommodate six competing licensees, the existing system can be provided comparable spectrum in one megahertz of spectrum in the air-ground band. Verizon Airfone acknowledges that a one megahertz spectrum block would enable it to continue its narrowband operations.[248]

76. Verizon Airfone's incumbent system must cease operations in the lower 1.5 MHz portion of each 2 MHz air-ground band within 24 months of the initial date of grant of any license, if band plan 1 or 2 is implemented; Verizon Airfone may relocate its incumbent operations to the upper 0.5 MHz portion of each 2 MHz band[249] and may continue to operate under the renewal authorization until the end of the five-year license term. If band plan 3 is implemented, Verizon Airfone's incumbent system must cease operations in the upper 1.5 MHz portion of each 2 MHz air-ground band within 24 months of the initial date of grant of license F; Verizon Airfone may relocate its incumbent operations to the lower 0.5 MHz portion of each 2 MHz band[250] and may continue to operate under the renewal authorization until the end of the five-year license term. We note that this transition period is consistent with Verizon Airfone's request that we provide it a "limited transitional period" for its narrowband system.[251] In revising our current air-ground rules, we are eliminating all of the command and control technical rules, which enabled dynamic sharing of communication channels under the former licensing scheme.[252] Verizon Airfone may reconfigure the narrowband channelization of its existing system in the upper 0.5 MHz portion of each 2 MHz band (or lower 0.5 MHz portion of each band if band plan 3 is implemented) any way it wants, including using control channel(s) of any authorized bandwidth less than 6 kHz (not limited to 3.2 kHz as they are now). We note that if Verizon Airfone acquires a new spectrum authorization as a result of competitive bidding, it could elect to continue its incumbent operations under such new authorization.

b. Reimbursement of Relocation Costs

77. We conclude, contrary to Verizon Airfone's arguments,[253] that it would not be inequitable for the company to bear any costs associated with relocating its narrowband operations within the 24-month period set out above to accommodate a new entrant in the air-ground band. The original 800 MHz air-ground band plan was intended to accommodate six competing licensees in the air-ground band, and Verizon Airfone has never had a right to exclusive use of the band. The new license that we grant Verizon Airfone today, moreover, provides the company a substantial period—two years from the initial grant of any new air-ground license—to relocate its narrowband operations to one megahertz of spectrum in the band. Assuming an auction and initial license grant one year after the effective date of this order, Verizon Airfone would need to limit its operations to one megahertz three years into its 5-year license term. We note that this approach is consistent with the company's request for a "limited transitional period"[254] to shift its narrowband operations to a 1 MHz spectrum block in the band.[255]

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[248] Verizon Airfone September 10 Statement at 20.

[249] This spectrum includes all of former channel blocks 1 and 2 and approximately half of former channel block 3.

[250] This spectrum includes all of former channel blocks 10 and 9 and approximately half of former channel block 8.

[251] Verizon Airfone Comments at 10.

[252] Specifically, Sections 22.857, 22.859, 22.863, 22.865, 22.869, and 22.871 are deleted. Sections 22.861 and 22.867 are amended to provide basic technical parameters for the new licensees.

[253] Verizon Airfone September 9 Statement at 5-6.

[254] Verizon Airfone Comments at 10.

[255] Verizon Airfone September 10 Statement at 20.

78. We do not foresee harm to the flying public flowing from Verizon Airfone bearing any relocation expenses it may have. As noted above, demand for Verizon Airfone's service has markedly declined in recent years, and the company's system is approaching technological obsolescence. The company, moreover, has had more than ten years to recoup its investment in its air-ground system. We note that a new air-ground licensee could seek to negotiate and compensate Verizon Airfone to relocate earlier than required by the terms of Verizon Airfone's new license; Verizon Airfone, however, will not be obligated to engage in such negotiations. On balance, we conclude that any burden that might be incurred by Verizon Airfone to relocate its operations under the conditions we are adopting should be minimal. Accordingly, we require Verizon Airfone to bear any costs for relocating its narrowband operations in the air-ground band at the end of the 24-month transition period.

c. Renewal of Call Sign KNKG804

79. We reject Verizon Airfone's claim that we must afford it a hearing under Section 316 of the Act in the event that we modify its license to operate in the 800 MHz air-ground band.[256] The hearing requirements of Section 316 only apply to modification of an existing license. Verizon Airfone's license expired on July 22, 2004, and Section 316 therefore is inapplicable.

80. We hereby grant Verizon Airfone Inc. a non-renewable license, Call Sign KNKG804, for a five-year term subject to the following conditions:

- If band plan 1 or 2 is implemented, Verizon Airfone must cease its existing narrowband operations in the lower 1.5 MHz portion of each 2 MHz air-ground band within 24 months of the initial date of grant of a new spectrum license.
- If band plan 1 or 2 is implemented, Verizon Airfone may relocate its incumbent operations to the upper 0.5 MHz portion of each 2 MHz band (0.5 MHz at 850.500-851.000 MHz paired with 0.5 MHz at 895.500-896.000 MHz).
- If band plan 3 is implemented, Verizon Airfone must cease its existing narrowband operations in the upper 1.5 MHz portion of each 2 MHz air-ground band within 24 months of the initial date of grant of a new spectrum license.
- If band plan 3 is implemented, Verizon Airfone may relocate its incumbent operations to the lower 0.5 MHz portion of each 2 MHz band (0.5 MHz at 849.000-849.500 MHz paired with 0.5 MHz at 894.000-894.500 MHz).
- The existing Section 22.867 power limits for ground stations (100 Watts ERP) and airborne mobile stations (30 Watts ERP) will become license terms. We are amending Section 22.867 and it will apply to the new licensees only.
- The existing Section 22.861 out-of-band and spurious emission limits will become license terms. We are amending Section 22.861 and it will apply to the new licensees only.
- The authorized emission bandwidth of any transmission from the existing system may not exceed 6 kHz. This license condition replaces Section 22.857(a)(2) because we are

[256] Verizon Airfone September 9 Statement at 4.

removing Section 22.857. This condition requires that the existing system remain a narrowband system.

81. Verizon Airfone must coordinate any technical changes within 885 kilometers (550 miles) of the U.S.-Canadian or U.S.-Mexican borders with the appropriate air-ground licensees in those countries prior to requesting appropriate governmental approval.[257] Verizon Airfone may locate or relocate ground stations operating at any power level (not exceeding 100 Watts), subject only to international coordination. Verizon Airfone must maintain and provide to the FCC and the new 800 MHz air-ground licensee(s) a current list of the locations and channels used at all ground stations, which will enable the licensee(s) to provide interference protection to the existing system's operations.

82. During the period that the existing system continues to operate and provide service, the licensee of a new spectrum license must not cause harmful interference to it. Protection from interference requires that the signals of the new licensee(s) must not exceed the current adjacent channel emission limit, which is a ground station received power of -130 dBm in 6 kHz, assuming a 0 dBi vertically polarized antenna.[258] This limit will provide full interference protection to the existing system.

6. Construction Requirements

83. The record indicates that an air-ground system using broadband technologies, such as FLASH-OFDM and CDMA2000 1xEV-DO, cannot be deployed while the incumbent system operates in the same spectrum,[259] and that paired 1.5 MHz channels will provide sufficient bandwidth in which to deploy these technologies.[260] As noted above, in order to facilitate the provision of advanced air-ground telecommunications services to the public in the near future, Verizon Airfone must cease operations in the lower 1.5 MHz portion of each air-ground band within 24 months of the initial date of grant of any new spectrum license if band plan 1[261] or 2 is implemented.[262] If band plan 3 is implemented, Verizon Airfone must cease operations in the upper 1.5 MHz portion of each air-ground band within 24 months of the initial date of grant of a new spectrum license.[263]

84. In light of these considerations, we find that a five-year substantial service construction requirement for any new spectrum license—other than the 1 MHz spectrum licenses D and E—will serve the public interest and is consistent with our statutory mandate "to prevent stockpiling or warehousing by licensees, and to promote investment in and rapid deployment of new technologies and services."[264] At the end of the five-year construction period, a licensee must provide substantial service to aircraft. We

[257] The FCC will submit coordination requests seeking any formal approvals needed under the existing international agreements, and will seek to update these agreements with these countries.

[258] 47 C.F.R. § 22.861(b).

[259] *See, e.g.*, AirCell Response to FCC Questions at 7 (noting that "the incumbent system will create severe interference upon the broadband systems"); Verizon Comments at 10.

[260] *See supra* para. 31.

[261] If band plan 1 is implemented, licensees A and B initially would share 1.5 MHz at 849.000-850.500 MHz paired with 1.5 MHz at 894.000-895.500 MHz. Once Verizon Airfone's incumbent system ceases operations in the upper 0.5 MHz of each band, licensee B would shift its operations to 1.5 MHz at 849.500-851.000 MHz paired with 1.5 MHz at 894.500-896.000 MHz.

[262] *See supra* para. 76.

[263] *Id.*

[264] 47 U.S.C. § 309(j)(4)(B).

define substantial service as service that is sound, favorable, and substantially above a level of mediocre service that would barely warrant renewal. We establish two safe harbors that would satisfy this substantial service obligation. First, construction and operation of 20 base stations, with at least one base station in each of the ten FAA regions,[265] at the five-year benchmark would constitute substantial service. Alternatively, the construction and operation of base stations capable of serving the airspace of at least 25 of the 50 busiest airports (as measured by annual passenger boardings) at the five-year benchmark would constitute substantial service.[266]

85. We do not establish a construction requirement for spectrum licenses D and E. If either of these licenses is acquired, the licensee would have to share spectrum with Verizon Airfone's incumbent system until the expiration of Verizon Airfone's non-renewable license term. Depending on system configuration, a licensee of spectrum block D or E might not find it technically desirable to operate an air-ground system while sharing spectrum with the incumbent system. Under these circumstances, a construction requirement could result in a licensee deploying a less than optimal system.

B. 400 MHz Air-Ground Radiotelephone Service

86. The general aviation air-ground service operates in the 454.675-454.975 and 459.675-459.975 MHz bands and involves the provision of telecommunications service to private aircraft such as small single engine craft and corporate jets.[267] As explained by one of the commenters in this proceeding, the channels licensed in this service are used for emergency and other purposes.[268] These channels are interconnected with the public switched telephone network.[269] Pursuant to our biennial review of regulations in the *Notice*, we are revising and eliminating certain rules governing this service.[270] We also note that, to date, the Commission has accepted for filing nine sets of mutually exclusive applications in this service. Because the Commission is required under Section 309(j) of the Communications Act to resolve this mutual exclusivity by auction, we propose competitive bidding rules for the general aviation air-ground service in the *Notice* of Proposed Rulemaking below.[271]

1. Form 409, Airborne Mobile Radio Telephone License Application

87. *Background*. In contrast to most Part 22 services, Section 22.3(b)(1) requires an individual authorization to operate a general aviation airborne mobile station—an end user unit—in the Air-Ground Radiotelephone Service.[272] This requirement is also reflected in Section 1.903(c) of our rules.[273] Individuals must file FCC Form 409 (Airborne Mobile Radio Telephone License Application) to

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[265] *See* http://www.faa.gov/arp/regions.cfm (FAA regions).

[266] *See* http://www.faa.gov/arp/planning/stats/2002/CY02CommSerBoard.pdf (FAA 2002 passenger boarding data).

[267] *See* 47 C.F.R. §§ 22.805-22.819.

[268] SkyTel Comments at 2.

[269] *Id.*

[270] In addition to the rules revised or eliminated as discussed below, we take this opportunity to update and reorganize the general aviation air-ground rules. In particular, we redesignate current Section 22.803 of the general rules as new Section 22.807 of the general aviation air-ground rules, and delete certain superfluous language therein that relates to the Rural Radiotelephone Service.

[271] *See infra* paras. 169-178.

[272] 47 C.F.R. § 22.3(b)(1).

[273] 47 C.F.R. § 1.903(c).

apply for authority to operate an airborne station or to modify or renew an existing license.[274] In the *Notice*, we tentatively concluded that this individual licensing requirement should be eliminated, although we also asked whether there might be any reasons for retaining this requirement or adopting a streamlined version of this requirement.[275]

88. *Discussion.* Despite the objections of SkyTel and Able Communications, we do not believe that the continued licensing of individual airborne mobile stations is warranted. SkyTel objects to the elimination of the licensing requirement because "there will be no means of knowing whether traffic is legitimate or from a rogue user on the system."[276] It adds that, unlike subscribers in the land mobile services, airborne subscribers are not associated with a single base station licensee, so if individual end user licensing is eliminated, there will be no way to determine the identity and number of potential users for the Air-Ground System.[277]

89. We have considered these concerns and do not believe they justify the continued use of FCC Form 409. At present, and likely for the foreseeable future, members of the public desiring service using the current Air-Ground Radiotelephone Automated Service (AGRAS) system must first purchase and install an AGRAS-compatible mobile telephone aboard their aircraft. Such mobile units are considerably more expensive and not as readily available as mobile telephones typically used with land-based public mobile systems. Coupled with the fact that the number of general aviation users is relatively small, the probability of "rogue" users is minimal.

90. More importantly, a potential air-ground subscriber must first register with the billing service utilized by the various air-ground licensees to obtain an aircraft telephone number in order to receive service. Therefore, the licensee's own billing service would know the number and identification of legitimate users of the air-ground AGRAS system. Presumably, if an un-registered or "rogue" user attempted to place calls over the AGRAS system, service would be denied.

91. In addition, the Commission has received few complaints regarding these stations. As pointed out in the *Notice*, Air-Ground equipment is used to communicate with ground facilities that are otherwise licensed by the Commission.[278] Moreover, we believe that the requirement to file Form 409 imposes an unnecessary regulatory burden on end users, because it involves preparation of a form as well as payment of a $50 fee for each subscriber unit.

92. Therefore, in keeping with the Commission's policy of simplifying, where appropriate, its licensing procedures and easing the administrative burden on licensees and other users of Wireless Radio Services, we eliminate, by revising Sections 1.903(c) and 22.3(b), the requirement that an authorization be obtained to operate general aviation airborne mobile stations in the Air-Ground Radiotelephone Service. We also eliminate FCC Form 409 and delete references to that form in Sections 1.1102 and 1.2003 of our rules.[279]

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[274] FCC Form 409 was adopted in 1976. *See* Amendment of Part 21, Domestic Public Radio Services (Other than Maritime Mobile) and Adoption of FCC Form 409, *Order*, 63 FCC 2d 228 (1976).

[275] *Notice*, 18 FCC Rcd at 8391 ¶25.

[276] SkyTel Comments at 2. *See also* Able Communications Comments at 3.

[277] SkyTel Comments at 3.

[278] *Notice*, 18 FCC Rcd at 8392 ¶27.

[279] 47 C.F.R. §§ 1.1102, 1.2003.

2. Idle Tone

93. *Background*. Section 22.811 provides that, when a ground station transmitter authorized to transmit on any Air-Ground Radiotelephone Service channel listed in Section 22.805 (for general aviation air-ground service) is available for service but idle, it must continuously transmit a modulated signal on that channel with a power between 10 and 20 dB lower than the normal transmitting power.[280] In the *Notice*, we pointed out that all U.S. Air-Ground stations are currently required to operate using Air-Ground Radiotelephone Automated Service (AGRAS), and that as a result, the idle tone rule, which was intended to facilitate manual Air-Ground service, appears to have become obsolete.[281] We thus tentatively concluded that Section 22.811 should be eliminated.[282]

94. *Discussion*. Both commenters on this issue express their desire to maintain the idle tone requirement. In particular, SkyTel argues that the rule is not obsolete, because idle tone transmissions facilitate the directing of calls to the correct channel.[283] Able Communications adds that eliminating the control tone in the AGRAS air-ground service would adversely affect users, as new AGRAS system improvements are "backwards compatible," relying on older protocols.[284] Despite these comments, we continue to believe that the deletion of Section 22.811 from our rules is warranted. We take this opportunity to point out that the removal of this rule in no way prohibits carriers from employing the idle control tone. To the contrary, the action we take today is permissive. To the extent that idle tone transmissions are deemed valuable by system operators, they are free to continue to use them. In light of today's automated system, however, we do not believe that mandating their continued use is warranted.

3. Construction Period for General Aviation Ground Stations

95. *Background*. Section 22.815 provides that "[t]he construction period (see § 22.142) for general aviation ground stations is 12 months."[285] In the *Notice*, we pointed out that former Section 22.142[286] was consolidated into current Section 1.946[287] as part of the implementation of the Universal Licensing System rules.[288] We therefore proposed to eliminate the reference to former Section 22.142 in Section 22.815 and replace it with a reference to Section 1.946.

96. *Discussion*. As proposed in the *Notice*, we correct the reference in Section 22.815 to specify the actual rule section, Section 1.946.

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[280] 47 C.F.R. § 22.811.

[281] *Notice*, 18 FCC Rcd at 8408 ¶73.

[282] *Id.*

[283] SkyTel Comments at 4.

[284] Able Communications Comments at 2. The commenter also states that older equipment still uses the idle control tones.

[285] 47 C.F.R. § 22.815.

[286] 47 C.F.R. § 22.142 (1997).

[287] 47 C.F.R. § 1.946.

[288] *Notice*, 18 FCC Rcd at 8408 ¶ 74; *see* Biennial Regulatory Review—Amendment of Parts 0, 1, 13, 22, 24, 26, 27, 80, 90, 95, 97 and 101 of the Commission's Rules to Facilitate the Development and Use of the Universal Licensing System in the Wireless Telecommunications Services, *Report and Order*, 13 FCC Rcd 21027 (1998) ("*ULS Report and Order*"); *Memorandum Opinion and Order on Reconsideration*, 14 FCC Rcd 11145 (1998).

4. AGRAS

97. *Background.* Section 22.819 provides that, after January 1, 1996, stations transmitting on the general aviation air-ground service channels must operate in compliance with the requirements set forth in the document, "Technical Reference, Air-ground Radiotelephone Automated Service (AGRAS), System Operation and Equipment Characteristics," dated April 12, 1985.[289] Previously, air-ground radiotelephone service was manual in nature, requiring operator assistance and intervention in handling all calls. The AGRAS protocols advanced this service so that calls could be directly dialed.[290] In addition, the automated system allows two or more competing ground stations in a location to share control channels.[291] In the *Notice*, we stated that the industry is currently developing a new operating technology that may be superior to AGRAS.[292] We sought comment on the best way in which to facilitate such technical innovation.[293]

98. *Discussion.* We disagree with SkyTel that the Commission should continue to require this particular technology, and will delete Section 22.819.[294] SkyTel comments that maintenance of the AGRAS protocol will ensure that any nascent standard is "implemented with backwards compatibility" and will therefore "protect owners of existing hardware and systems" that might not be able immediately to implement a new technology when it arrives.[295] We point out that our deletion of the rule does not mean that the AGRAS protocols are prohibited. To the contrary, technological advancements in this area may continue to utilize AGRAS protocols if developers believe it would be appropriate. Despite SkyTel's concerns, we are unwilling at this time to mandate the use of a particular technology when the market is more suited to make these decisions. We also believe that it is unlikely that the industry would simply forsake the current users of these systems.

C. Revision of Part 22 Non-Cellular Rules

1. Scope and Authority—Authorization Required, General Eligibility, and Definitions

99. *Background.* Section 22.3(b) provides that, except for certain stations in the Rural Radiotelephone Service and the Air-Ground Radiotelephone Service, the operation by subscribers of mobile or fixed stations in the Public Mobile Services is covered by "the authorization held by the common carrier providing service to them."[296] In the *Notice*, we proposed to eliminate the restriction that license holders in Part 22 may only be current or future "common carriers."[297] We tentatively concluded that the term "common carrier" in Section 22.3(b) should be replaced with the term "licensee," and that

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[289] 47 C.F.R. § 22.819.

[290] *See* "Technical Reference, Air-ground Radiotelephone Automated Service (AGRAS), System Operation and Equipment Characteristics," REF: 650-0244-000, dated Apr. 12, 1985.

[291] *Id.*

[292] *Notice*, 18 FCC Rcd at 8408 ¶74.

[293] *Id.* at 8408-09 ¶75.

[294] 47 C.F.R. § 22.819.

[295] SkyTel Comments at 4.

[296] 47 C.F.R. § 22.3(b). Accordingly, end users do not file applications with the Commission for authority to use their mobile phones.

[297] *Notice*, 18 FCC Rcd at 8391 ¶24.

end users could continue to rely on the operating authority granted by the Commission to their service provider.[298]

100. Part 22 also contains other rules that use the term "common carrier." Section 22.7 states that, "except as otherwise provided in this part, existing and proposed common carriers are eligible to hold authorizations in the Public Mobile Services."[299] In the *Notice*, we proposed to delete this limitation.[300] We also pointed out that several of the definitions contained in Section 22.99 include references to the term "common carrier" that, should we adopt our proposal to remove the common carrier eligibility restriction, should be replaced with the term "licensee." We specifically sought comment regarding whether elimination of the common carrier eligibility requirement in Part 22 could have any detrimental effect for Part 22 licensees.[301] Finally, we observed that the distinctions previously drawn between a radio common carrier and a wireline common carrier under the Part 22 rules became obsolete in 1984.[302]

101. *Discussion.* We revise Sections 22.3(b), 22.7, and 22.99 as proposed in the *Notice*, by replacing the term "common carrier" with the term "licensee," and thus deleting the requirement that licensees in Part 22 services be common carriers.[303] We also revise Section 22.1(b) to delete the reference to "domestic common carrier," and Section 22.401 to delete the words "Communications common carriers" and replace with the words "Eligible entities (see § 22.7)." These revisions help to implement the proposal we adopt to remove the common carrier restriction from the Part 22 eligibility rules. We agree with Blooston that Section 22.351, regarding channel assignments, should be similarly amended.[304] Finally, we delete the definitions for Radio Common Carrier and Wireline Common Carrier, as these terms are no longer used in Part 22, and correct references to the term "Air-ground Radiotelephone Service" contained in several definitions in Section 22.99 to read "Air-Ground Radiotelephone Service."

102. While the commenters are overwhelmingly supportive of our proposal to remove the common carrier restriction from the Part 22 eligibility rules,[305] Arch Wireless and Able Communications have expressed concern that the proposed rule change might alter the ability of licensees to retain the protections and rights that common carrier status provides.[306] In particular, Arch states that common carrier status has played an important part in achieving interconnection agreements with incumbent local exchange carriers and notes that common carriers are exempt from Health Insurance Portability and Accountability Act of 1996[307] privacy rules.[308] Able Communications expresses similar concerns

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[298] *Id.*

[299] 47 C.F.R. § 22.7.

[300] *Notice*, 18 FCC Rcd at 8392-93 ¶28.

[301] *Id.* at 8393 ¶29.

[302] *Id.* at 8393 ¶29 n.79.

[303] *Id.* at 8391-94 ¶¶24-30.

[304] Blooston Comments at 8.

[305] *See, e.g.*, AMTA Comments at 6; Cingular Wireless Comments at 18; Joint Comments at 3-4; and NYSE&GC Reply Comments at 3-4.

[306] *See* Able Communications Comments at 4; Arch Wireless Comments at 6.

[307] Health Insurance Portability and Accountability Act of 1996, Pub. L. No. 104-191 (1996).

[308] Arch Wireless Comments at 6-7.

regarding privacy, interconnection, and licensees' standing in state and federal courts.[309]

103. Our action today does not impact a licensee's ability to elect common carrier status under our Part 22 rules. We thus find that the commenters' concerns that these rule changes could mean that common carriers might lose certain legal and regulatory protections are unwarranted. As Blooston suggests, common carrier status should be viewed as an "option, rather than a requirement for Part 22 licensees," and the election of common carrier status should still entail protections to CMRS providers.[310] We agree. Consequently, we emphasize that our objective here is to remove the requirement that Part 22 licensees be common carriers (*i.e.*, remove the eligibility restriction), without impacting the ability of licensees to choose such status if so desired.

2. Licensing Requirements and Procedures

a. Construction Prior to Grant of Application

104. *Background.* Section 22.143(d)(4) of our rules provides that, for any pre-grant construction or alteration that would exceed the requirements of Section 17.7,[311] the licensee must notify the FAA and file "a request for antenna height clearance and obstruction and marking specifications (FCC Form 854) with the FCC, PRB, Support Services Branch, Gettysburg, PA 17325."[312] In the *Notice*, we proposed to make an editorial correction to the Form 854 filing location to "WTB, Database Management Division, Analysis and Development Branch, 1120 Fairfield Road, Gettysburg, PA 17325."[313] We also proposed to amend Section 22.143(d)(4) to specify that Form 854 may be filed electronically by accessing the Commission's Antenna Structure Registration home page at wireless.fcc.gov/antenna/.[314]

105. *Discussion.* No comments were received regarding these proposed changes, which will provide the public with better information. We note that since the *Notice* was released, the Wireless Telecommunications Bureau, in late 2003, was reorganized.[315] As a result, the correct filing location for FCC Form 854 is "WTB, Spectrum Management Resources and Technologies Division, 1270 Fairfield Road, Gettysburg, PA 17325." We revise this form accordingly, and we amend Section 22.143(d)(4) of our rules to include this updated address.

b. Computation of Distance

106. *Background.* In the *Notice*, we proposed to recodify Section 22.157 in Part 1, Subpart F, as new Section 1.958, so that a single distance calculation method would apply to all Wireless Radio Services, providing regulatory certainty and consistency to service providers licensed under these rule parts.[316] Currently, Section 22.157 requires that distance calculations be rounded to the nearest whole kilometer, while Section 90.309(a)(1) requires that they be rounded to the nearest 0.1 kilometer.[317] We

[309] Able Communications Comments at 4.

[310] Blooston Comments at 3, 7.

[311] 47 C.F.R. § 17.7 (antenna structures requiring notification to the FAA).

[312] 47 C.F.R. § 22.143(d)(4).

[313] *Notice*, 18 FCC Rcd at 8394 ¶31.

[314] *Id.*

[315] *See* FCC's Wireless Bureau Announces Reorganization, *Public Notice* (rel. Nov. 24, 2003).

[316] *Notice*, 18 FCC Rcd at 8394-95 ¶33.

[317] *See Notice*, 18 FCC Rcd at 8394 ¶32; 47 C.F.R. §§ 22.157, 90.309(a)(1).

also noted that the Section 90.309(a)(1) calculation method was based on the Section 73.611[318] calculation method, and we tentatively concluded that the reference to Section 73.611 in Section 90.309(a)(1) should be deleted and replaced by a reference to new Section 1.958.[319]

107. *Discussion.* We recodify Section 22.157 as new Section 1.958 in Part 1, Subpart F. This will make the Section 22.157 distance calculation method applicable to all Wireless Radio Services described in Parts 1 (except Parts 21 and 101 as explained below), 20, 22, 24, 27, 80, 87, 90, 95, and 97,[320] and supersede any conflicting regulations in these Parts.[321] We note that software used by the Commission to process applications under Parts 21 (Domestic Public Fixed Radio Services) and 101 (Fixed Microwave Services) is programmed to round the result of a distance calculation to the nearest tenth of a kilometer. Accordingly, we include language in new Section 1.958 to indicate that distance calculations for applications under these parts must be rounded to the nearest tenth of a kilometer.

108. We disagree with the suggestions of two commenters that we adopt the "Great Circle Route" method of computing distance.[322] This distance calculation method inputs the latitudes and longitudes of two points into formulas derived from spherical trigonometry to measure the great circle distance. A great circle is the intersection of a sphere with a plane passing through the center of the sphere. Arcs of great circles on the earth represent the shortest route between two points on its surface.[323] First, while this method can be more accurate for longer distances (*i.e.*, distances of approximately 500 kilometers or more), the majority of distance calculations in the Public Mobile Services are for much shorter distances. Second, we do not believe that the improvements in accuracy resulting from this method are significant. Third, the mathematical calculations that are required are too complex to warrant its use. We believe that recodification of Section 22.157 in Part 1 is a more workable, practical approach for applicants.[324]

c. Computation of Terrain Elevation

109. *Background.* Section 22.159 sets forth the method for computing average terrain elevation for Part 22 services.[325] Section 90.309(a)(4) sets forth the method for computing average terrain elevation for Part 90 services in the 470-512 MHz band.[326] Calculations for the 470-512 MHz band are unique because they must take into consideration land mobile and co-channel and adjacent channel UHF TV station operations.[327] Parts 20, 21, 24, 27, 80, 87, 95, 97, and 101 generally do not specify a terrain

[318] 47 C.F.R. § 73.611.

[319] *See Notice*, 18 FCC Rcd at 8394 ¶32.

[320] *See* 47 C.F.R. § 1.901.

[321] *See* 47 C.F.R. § 1.902.

[322] Cingular Wireless Comments at 18; Verizon Airfone Reply Comments at 7.

[323] The equator is a great circle as are all meridians of longitude. This distance calculation method can prove to be more accurate for longer distances as it relies on a spherical, not flat, earth. However, the Great Circle Route requires hi-precision transcendental functions in order to achieve accuracy at shorter distances.

[324] If an applicant deems the distance calculation methodology set forth in new Section 1.958 to not be accurate, it can always seek a waiver to use an alternative methodology under the applicable Commission waiver standards.

[325] 47 C.F.R. § 22.159.

[326] 47 C.F.R. § 90.309(a)(4).

[327] 47 C.F.R. § 90.309(a)(4).

elevation calculation method.[328] In the *Notice*, we proposed to recodify Section 22.159 in Part 1, Subpart F, as new Section 1.959.[329] We also proposed to retain the Section 90.309(a)(4) method for computing average terrain elevation for the 470-512 MHz band under Part 90, and cross-reference it in new Section 1.959.[330]

110. *Discussion.* We recodify Section 22.159 as new Section 1.959 in Part 1, Subpart F. Those commenters that discuss this issue support the adoption of a consistent terrain elevation calculation method applicable to all Wireless Radio Services.[331] Consequently, we make the change as proposed in the *Notice*.[332] Part 90 services in the 470-512 MHz band, due to their proximity to TV operations, will continue to be governed by Section 90.309(a)(4).[333] Thus, all wireless services under Parts 1, 20, 22, 24, 27, 80, 87, 90 (except the 470-512 MHz band), 95, 97 and 101 will be subject to the same computation methodology.

d. ASSB

111. *Background.* Section 22.161 sets forth application requirements for base stations in the Paging and Radiotelephone Service, Rural Radiotelephone Service, and Offshore Radiotelephone Service where the applicant proposes to employ amplitude compandored single sideband modulation (ASSB).[334] In the *Notice*, we tentatively concluded that Section 22.161 should be eliminated.[335]

112. *Discussion.* We delete Section 22.161.[336] No comments were received on this ASSB issue. As pointed out in the *Notice*,[337] this rule section is obsolete in light of Section 22.357, which permits Part 22 licensees to use any emission type that complies with applicable emission limits.[338]

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[328] Parts 20, 21, 87, 95 and 97 have no height above average terrain ("HAAT") rules. Section 24.53, 47 C.F.R. § 24.53, is generally the same as Section 22.159. Part 27 defines "average terrain elevation" in Section 27.4, 47 C.F.R. § 27.4, and uses HAAT in Section 27.50, 47 C.F.R. § 27.50, but does not specify how to calculate it. Section 80.757, 47 C.F.R. § 80.757, provides that average terrain elevation may be either computer-generated or derived from the use of topographical maps. Section 80.759, 47 C.F.R. § 80.759, provides details of the manual method, where height above average terrain is determined by calculations based on the drawing of radials away from the antenna site. Part 101 refers to "AAT" in Sections 101.105 and 101.1333, 47 C.F.R. §§ 101.105, 101.1333, but does not specify how it shall be calculated.

[329] *Notice*, 18 FCC Rcd at 8395 ¶34.

[330] *Id.*

[331] *See* Verizon Wireless Comments at 10; Cingular Wireless Comments at 18.

[332] *Notice*, 18 FCC Rcd at 8395 ¶34.

[333] 47 C.FR. § 90.309(a)(4).

[334] 47 C.F.R. § 22.161.

[335] *Notice*, 18 FCC Rcd at 8396 ¶35.

[336] We also eliminate the reference to this section in the definition of "Channel" in Section 22.99. *See* 47 C.F.R. § 22.99.

[337] *Notice*, 18 FCC Rcd at 8396 ¶35.

[338] 47 C.F.R. § 22.357.

3. Operational and Technical Requirements

a. Channel Assignment Policy

113. *Background.* Section 22.351 sets forth the general policy for the assignment of PMS channels.[339] The third sentence of this section uses the term "common carrier."[340] In the *Notice*, we proposed to replace the term "common carrier" with the term "licensee."[341]

114. *Discussion.* Consistent with our action above,[342] we amend Section 22.351 as proposed in the *Notice*.

b. Interference Protection

115. *Background.* Section 22.352 provides, in pertinent part, that PMS licensees shall be considered non-interfering if they operate in accordance "with FCC rules that provide technical channel assignment criteria for the radio service or channels involved, all other applicable FCC rules, and the terms and conditions of their authorizations."[343] This rule helps to alleviate the administrative burden on the Commission of resolving interference complaints by creating a presumption that operations consistent with our rules and the applicable authorization are non-interfering. In the *Notice*, we tentatively concluded that this provision in the rule section could be streamlined by essentially removing the language regarding technical channel assignment criteria.[344]

116. *Discussion.* We modify the relevant portion of Section 22.352 to read "Public Mobile Service stations operating in accordance with applicable FCC rules and the terms and conditions of their authorizations are normally considered to be non-interfering."[345] No comments were received on this topic. The streamlined wording we adopt more accurately reflects how the Commission currently addresses interference issues, as we make clear that operation consistent with Commission rules and the applicable authorization—whether on a site-by-site basis or on a geographic area basis—creates a presumption of non-interfering operation.

c. Emission Types and Emission Masks

117. *Background.* An emission mask is defined as "[t]he design limits imposed, as a condition or certification, on the mean power of emissions as a function of frequency both within the authorized bandwidth and in the adjacent spectrum."[346] Section 22.357 provides that any authorized PMS station may use any type of emission provided that it complies with the appropriate emission mask.[347] Section

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[339] 47 C.F.R. § 22.351.

[340] This sentence provides: "Except as otherwise provided in this part, each channel or channel block is assigned exclusively to one common carrier in each service area." 47 C.F.R. § 22.351.

[341] *Notice*, 18 FCC Rcd at 8396 ¶36.

[342] *See supra* paras. 99-103.

[343] 47 C.F.R. § 22.352.

[344] *Notice*, 18 FCC Rcd at 8396 ¶37.

[345] *See id.*

[346] 47 C.F.R. § 22.99.

[347] 47 C.F.R. § 22.357.

22.359 is the general emission mask rule.[348] Section 22.861 is the emission limitations and mask rule for commercial aviation air-ground systems.[349] At the time the Commission adopted the Part 22 rules, it generally used the emission mask approach to regulate in-band energy distribution. Recently, however, the Commission has been decreasing its reliance on the use of emission masks as a means to limit interference and, instead, increased its reliance on the use of out-of-band emission (OOBE) limits.[350] The salient difference between emission masks and OOBE limits is that OOBE limits do not limit emission levels within a particular frequency band. Rather, they are intended to limit emissions outside of the authorized bandwidth. In the *Notice*, we sought comment on possible revision or elimination of Sections 22.357, 22.359, and 22.861 in light of the trend toward use of OOBE limits.[351] We also sought comment on whether we should adopt OOBE limits for the Part 22 services that are the subject of this proceeding.[352]

118. *Discussion*. Consistent with the recent increased use of OOBE limits, we replace the emission mask requirements found in Sections 22.357, 22.359, and 22.861 with an OOBE limitation. Of the commenters that discussed this issue, Cingular Wireless and Verizon Wireless favor OOBE limits over emission masks as the method of preventing harmful interference.[353] We believe that OOBE limitations are preferable to emission masks for the PMS because OOBE limitations do not need to be revised every time a new technology is implemented (unlike emission masks). Moreover, OOBE limitations make more sense with channels that are often combined in blocks, since there is no need for a single licensee on adjacent channels to be required to use an emission mask on each channel to protect itself. OOBE limitations protect services operating beyond the outer edges of the channel block. Emission masks require protection of each individual channel within the block.

119. The National Telecommunications and Information Administration (NTIA), while not opposed to our approach regarding OOBE limitations, recommends that we clarify the unwanted emissions to be covered by the term OOBE consistent with International Telecommunication Union (ITU) definitions.[354] That entity's main concern is that our use of an OOBE standard may not include spurious emissions, which it believes should be covered.[355] We clarify that, for purposes of this proceeding, we interpret our OOBE limitations to include what would be termed "spurious" emissions under the ITU standards.

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[348] 47 C.F.R. § 22.359.

[349] 47 C.F.R. § 22.861.

[350] *See, e.g.*, 47 C.F.R. §§ 27.53(a)(10) (Wireless Communications Services), 22.917 (Cellular), and 24.238 (Broadband PCS); *Cellular Year 2000 Biennial Report and Order*, 17 FCC Rcd at 18426 ¶6.

[351] *Notice*, 18 FCC Rcd at 8397 ¶38.

[352] *Id.*

[353] Cingular Wireless Comments at 18; Verizon Wireless Comments at 10.

[354] NTIA Comments at 3. Our definitions specifically define OOBE and spurious emissions separately. *See* 47 C.F.R. § 2.1. We recognize that our usage of this terminology in Part 22 and other wireless parts and in recent wireless proceedings does not precisely track the ITU definitions. We use the term "OOBE" to mean what the ITU calls "unwanted emissions." Although we agree with NTIA that it would be preferable to harmonize our terms with those of the ITU, doing so is beyond the scope of this proceeding. We look forward, however, to addressing this issue in the future.

[355] NTIA Comments at 2-3.

d. Standby Facilities

120. *Background.* Section 22.361 permits PMS licensees to install standby transmitters, without separate authorization, to continue service in the event of transmitter failure or during transmitter maintenance.[356] In the *Notice*, we tentatively concluded that this section should be eliminated, as it is now universally understood in the wireless industry that licensees are not required to obtain a separate authorization to install standby transmitters.[357]

121. *Discussion.* We agree with the one commenter that mentioned this issue that eliminating Section 22.361 is warranted.[358] We also note that doing so is in line with our desire to streamline or eliminate rules that are no longer necessary.[359] Thus, we eliminate Section 22.361.

e. Directional Antennas

122. *Background.* Section 22.363 and Table C-2 to Section 22.361 set forth directional antenna technical requirements.[360] These requirements were adopted at a time when the Commission generally considered fixed wireless operations to be secondary to mobile operations. As noted in the *Notice*, these regulations appear to no longer be necessary because, when the Commission licenses spectrum today, it provides greater flexibility to licensees to use the spectrum for mobile or fixed operations.[361] Accordingly, we tentatively concluded that Section 22.363 and Table C-2 to Section 22.361 should be eliminated.[362]

123. *Discussion.* We eliminate the directional antenna requirements as proposed in the *Notice*. The lone commenter on this issue endorses our approach here,[363] which we believe better reflects the current regulatory landscape.

f. Wave Polarization

124. *Background.* Section 22.367 sets forth polarization requirements for the electromagnetic waves radiated by PMS providers.[364] In the *Notice*, we observed that, where fixed and mobile services operate on a co-channel basis, the polarization restrictions may no longer be necessary or effective in reducing interference.[365] We therefore sought comment on whether we should eliminate Section

[356] 47 C.F.R. § 22.361.

[357] *Notice*, 18 FCC Rcd at 8397 ¶39.

[358] *See* Verizon Wireless Comments at 10.

[359] *See, e.g.*, Biennial Regulatory Review—Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services, *Notice of Proposed Rule Making*, 19 FCC Rcd 708 ¶3 (2004).

[360] 47 C.F.R. §§ 22.363, 22.361, Table C-2.

[361] *Notice*, 18 FCC Rcd at 8397 ¶40.

[362] *Id.*

[363] Verizon Wireless Comments at 10.

[364] 47 C.F.R. § 22.367. This section specifies when vertical, horizontal, or circular polarization may be used for Part 22 Services.

[365] *Notice*, 18 FCC Rcd at 8397-98 ¶41. We also noted that other CMRS providers, such as PCS and SMR providers, are not subject to a wave polarization requirement, and that the Commission recently eliminated the vertical wave polarization requirement for base, mobile, and auxiliary test transmitters in the Cellular Radiotelephone Service. *Cellular Year 2000 Biennial Report and Order*, 17 FCC Rcd at 18427 ¶48 (2002).

22.367.[366]

125. *Discussion.* The only commenter that mentions this issue supports the elimination of the rule,[367] and we agree that this change is warranted. Thus, we delete Section 22.367.

g. Access to Transmitters

126. *Background.* Section 22.373 generally requires PMS transmitters to be accessible only to persons authorized by the licensee.[368] In the *Notice*, we tentatively concluded that this rule is not necessary to insure that unauthorized persons are kept out of PMS transmitter sites, and consequently, that the section should be eliminated.[369]

127. *Discussion.* We remove Section 22.373 from our rules. Although no commenters mention this issue, we believe that the rule is unnecessary due to the fact that licensees have an economic self-interest to prevent unauthorized access to their transmitters.

h. Replacement of Equipment

128. *Background.* Section 22.379 permits PMS licensees to replace equipment without notifying the Commission, provided that such equipment meets certain technical requirements.[370] In the *Notice*, we tentatively concluded that Section 22.379 is no longer necessary, and should therefore be eliminated, because licensees have known since the rule change in 1994 that applications are not required for replacement equipment.[371]

129. *Discussion.* We eliminate Section 22.379. While no comments were received regarding this issue, we believe that Wireless Radio Service licensees understand that they are not required to file an application in order to deploy replacement equipment, provided that such equipment meets the technical requirements for the service involved. As a result, the rule is no longer necessary.

i. Auxiliary Test Transmitters

130. *Background.* Section 22.381 limits the use of auxiliary test transmitters to testing the performance of fixed receiving equipment located remotely from the control point.[372] Section 22.381 further provides that such transmitters may only transmit on channels designated for mobile transmitters.[373] In the *Notice*, we tentatively concluded that this section should be eliminated, because limiting test transmissions to only the mobile frequencies appears overly prohibitive.[374]

131. *Discussion.* We believe that Section 22.381 unnecessarily restricts the use of test

[366] *Notice*, 18 FCC Rcd at 8397 ¶41.

[367] Verizon Wireless Comments at 10.

[368] 47 C.F.R. § 22.373.

[369] *Notice*, 18 FCC Rcd at 8397 ¶41.

[370] 47 C.F.R. § 22.379.

[371] *Notice*, 18 FCC Rcd at 8398 ¶43.

[372] 47 C.F.R. § 22.381.

[373] *Id.*

[374] *Notice*, 18 FCC Rcd at 8398 ¶44.

equipment, and therefore we eliminate this section from our rules. We are aware of no harm that would arise from operating auxiliary test transmitters on any authorized channel, whether base or mobile, and no commenters have suggested otherwise.

j. In-building Radiation Systems

132. *Background.* Section 22.99 defines "in-building radiation systems" as "[s]upplementary systems comprising low power transmitters, receivers, indoor antennas and/or leaky coaxial cable radiators, designed to improve service reliability inside buildings or structures located within the service areas of stations in the Public Mobile Services."[375] Section 22.383 provides that PMS licensees may install in-building radiation systems, without prior Commission approval, within their "protected service area."[376] Section 22.352(c)(7), which contains a cross-reference to Section 22.383, provides that no interference protection is afforded to in-building radiation systems.[377] In-building radiation systems are exempted from FAA notification under Section 17.14(a)[378] and, under Section 22.377, transmitters used with in-building radiation systems must be certificated for use in the radio services regulated under Part 22.[379] In the *Notice*, we tentatively concluded that Section 22.383 is no longer needed and should be eliminated.[380]

133. *Discussion.* The lone commenter that addresses this issue supports the approach set forth in the *Notice*, but expresses concern that readily available off-the-shelf boosters could cause harmful interference to cellular networks.[381] At this time, we take no action on the proposal set forth in the *Notice*. Commission staff currently is examining a set of issues related to the appropriate regulatory treatment of wireless boosters used to improve or facilitate service in a number of areas, including buildings. Accordingly, we will address Section 22.383 in the context of that examination. We do take this opportunity to clarify that, under our current policies, such devices may only be operated by a licensee or pursuant to the licensee's permission and control, unless they fall under the power limits for unlicensed devices under our Part 15 rules.[382]

4. Developmental Authorizations

134. Part 22, Subpart D—which includes Sections 22.401, 22.403, 22.409, 22.411, 22.413, 22.415, and 22.417—governs grant of developmental authorizations in the PMS.[383] As pointed out in the *Notice*, a review of Commission records indicates that these rules are seldom used and, instead, parties frequently file waiver requests that are tantamount to requests for developmental authorizations.[384] We therefore sought comment regarding how any of our Part 22 rules governing developmental

[375] 47 C.F.R. § 22.99.

[376] 47 C.F.R. § 22.383.

[377] 47 C.F.R. § 22.352(c)(7).

[378] 47 C.F.R. § 17.14(a).

[379] 47 C.F.R. § 22.377.

[380] *Notice*, 18 FCC Rcd at 8399 ¶45. We also concluded that the cross-reference to this section in Section 22.352(c)(7) should be eliminated.

[381] Verizon Wireless Comments at 11-12.

[382] *See id.* at 11.

[383] 47 C.F.R. Pt. 22, Subpt. D.

[384] *Notice*, 18 FCC Rcd at 8399 ¶46.